

## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D 23 FEB 2006

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|---|--|--|
| Applicant's or agent's file reference<br>020305WO   | <b>FOR FURTHER ACTION</b> See Form PCT/IPEA/416              |  |
| International application No.<br>PCT/US2004/026349  | International filing date (day/month/year)<br>12 August 2004 | Priority date (day/month/year)<br>28 August 2003 |
| International Patent Classification (IPC) or national classification and IPC<br>Int. Cl. <b>H04L 25/02</b> (2006.01) and US CL: 375/350 |  |  |
| Applicant<br>QUALCOMM INCORPORATED et al  |  |  |

- This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
- This REPORT consists of a total of 5 sheets, including this cover sheet.
- This report is also accompanied by ANNEXES, comprising:
  - ☐ (sent to the applicant and to the International Bureau) a total of sheets, as follows:
    - ☐ sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
    - ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
  - ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or table related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).
- This report contains indications relating to the following items:
 

|   |   |
|---|---|
| <input checked="" type="checkbox"/> Box No. I | Basis of the report   |
| <input type="checkbox"/> Box No. II           | Priority  |
| <input type="checkbox"/> Box No. III          | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability  |
| <input type="checkbox"/> Box No. IV           | Lack of unity of invention  |
| <input checked="" type="checkbox"/> Box No. V | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| <input type="checkbox"/> Box No. VI           | Certain documents cited   |
| <input type="checkbox"/> Box No. VII          | Certain defects in the international application  |
| <input type="checkbox"/> Box No. VIII         | Certain observations on the international application   |

|   |   |
|---|---|
| Date of submission of the demand<br>24 March 2005   | Date of completion of this report<br>21 FEB 2006                              |
| Name and mailing address of the IPEA/AU<br>Mail Stop PCT, Attn: ISA/US<br>Commissioner for Patents<br>P. O. Box 1450, Alexandria, Virginia 22313-1450<br>FACSIMILE NO. 571-273-3201 | Authorized Officer<br><br>Blaine R. Copenheaver<br>TELEPHONE NO. 571-272-7774 |

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/US2004/026349

**Box No. I Basis of the report**

## 1. With regard to the language, this report is based on:

- ☒ The international application in the language in which it was filed
- ☐ A translation of the international application into \_\_\_\_\_, which is the language of a
- ☐ international search (under Rules 12.3(a) and 23.1 (b))
- ☐ publication of the international application (under Rule 12.4(a))
- ☐ international preliminary examination (Rules 55.2(a) and/or 55.3(a))

2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

- ☒ the international application as originally filed/furnished
- ☐ the description:
- |        |  |
|--------|--|
| pages  | as originally filed/furnished                          |
| pages* | received by this Authority on _____ with the letter of |
| pages* | received by this Authority on _____ with the letter of |
- ☐ the claims:
- |        |   |
|--------|---|
| pages  | as originally filed/furnished                             |
| pages* | as amended (together with any statement) under Article 19 |
| pages* | received by this Authority on _____ with the letter of    |
| pages* | received by this Authority on _____ with the letter of    |
- ☐ the drawings:
- |        |  |
|--------|--|
| pages  | as originally filed/furnished                          |
| pages* | received by this Authority on _____ with the letter of |
| pages* | received by this Authority on _____ with the letter of |
- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to the sequence listing (*specify*):

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to the sequence listing (*specify*):

\* If item 4 applies, some or all of those sheets may be marked "superseded."

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

## 1. Statement

|                               |                            |     |
|-------------------------------|----------------------------|-----|
| Novelty (N)                   | Claims 12-18, 30-36, 48-54 | YES |
|                               | Claims 1-11, 19-29, 37-47  | NO  |
| Inventive step (IS)           | Claims 12-18, 30-36, 48-54 | YES |
|                               | Claims 1-11, 19-29, 37-47  | NO  |
| Industrial applicability (IA) | Claims 1-54                | YES |
|                               | Claims -                   | NO  |

## 2. Citations and explanations (Rule 70.7)

The following documents are referred to in this communication:

D1: WO 2002/005442 A2 (HARRIS CORP.) 17 January 2002

D2: TENG JOON LIM: "Bias in CDMA channel estimates with the use of short spreading sequences" IEEE 6<sup>th</sup> Int. Symp. on Spread-Spectrum, N.J. USA, Vol. 1, 6 September 2000, pages 288-291, XP010517569

## INDEPENDENT CLAIMS 1, 19, 37

The present application does not meet the criteria of Article 33(1) PCT, because the subject matter of claim 1 is not new in the sense of Article 33(2) PCT.

Document D1 discloses (the references in parenthesis applying to this document):

A method of estimating a communication channel impulse response  $h(t)$ , comprising the steps of:

generating a data sequence  $d_i$  (six symbol dwell pattern mentioned on page 10 lines 5 to 34) having a constrained portion  $Cd_i$  (symbols  $d_1$  to  $d_6$ ) associated with at least two codes  $w_a, w_r$  (in the case the pattern -1, -1, +1, +1 is used as symbols  $d_1$  to  $d_6$ , as mentioned on figure 11), wherein a correlation  $A_{code}(k)$  of the constrained portion  $Cd_i$  with one of the codes  $w_a, w_r$  is characterized by a maximum value at  $k=0$  less than maximum values at  $k \neq 0$ ;

generating a chip sequence  $c_j$  having a chip period  $T_c$  as the data sequence  $d_i$  spread by a spreading sequence  $S_i$  of length  $N$  (page 6, lines 16-18);

generating  $com(t) = co(t + mNT_c)$  for  $m=0, 1, \dots, M$  by correlating a received signal  $r(t)$  with the spreading sequence  $S_i$ , wherein the received signal  $r(t)$  comprises the chip sequence  $c_j$  applied to the communication channel (page 7, lines 12-18); and

generating an estimated communication channel impulse response  $h_{est}(t)$  as a combination of  $com(t)$  and  $d_m$  for  $m=0, 1, \dots, M$  (page 10 lines 5 to 34).

Therefore the subject matter of claim 1 is not new in the sense of Article 33(2) PCT.

The same objection applies to independent claim 37, which is the corresponding claim in another category,

(continued on supplemental box)

## Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of: Box V

combined with the fact that the use of a correlator and estimator in Document D1 is implicit. Concerning claim 19, which contains all the features of claim 37, the same objection applies as well. Consequently, the subject matter of claims 19 and 37 is not new in the sense of Article 33(2) PCT.

DEPENDENT CLAIMS 2-11, 20-29, 38-47

Dependent claims 2-11, 20-29, 38-47 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step (Article 33(2) and (3) PCT).